BY ORDER OF THE COMMANDER
AIR FORCE MATERIEL COMMAND

AIR FORCE INSTRUCTION 91-202

AIR FORCE MATERIEL COMMAND
Supplement 1

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Safety

THE US AIR FORCE MISHAP PREVENTION PROGRAM

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This supplement applies to the AFMC Safety Office and to the AFMC product centers, air logistics centers (ALC), laboratories, and test centers. It does not apply to the Air National Guard or US Air Force Reserve units and members.

SUMMARY OF REVISIONS

This supplement contains minor revisions to conform to revised AFI 91-202.

AFI 91-202, 1 August 1998, is supplemented as follows:

1.1. AFMC Safety Policy Statement : The preservation of both people and our limited resources should be very important to everyone in AFMC. Safety is one of our command goals and everyone performs a vital role. Mission success is contingent on each member's involvement and awareness. We must constantly strive to perform as safely as possible at all levels. We can't allow ourselves to become complacent just because we have a good safety record. Good records come from working towards a collective goal. We need to constantly look at "what's possible" for continued improvement. Close attention must be given to our goals and the standards used to measure program performance, if we are serious about an effective program. Part of each manager's operational risk management (ORM) process is to involve all workers as members of your team. Balance risk and regard for mission accomplishment, and demonstrate your commitment to safety by placing emphasis on responsibility at all levels. A mature safety program evolves through the addition and incorporation of new ideas and cultural changes. The individual, the environment and the supervisor must all be in synchronization and ready to perform the mission at hand....if not, there's an accident waiting to happen. However, any Air Force, AFMC, or unit safety philosophy is meaningless unless you incorporate it within your operations to protect your people and mission. Take note, that within AFMC, there should be no doubt as to who is responsible for safety.

1.4.2.3. ORM is a CSAF and AFMC priority program. AFMC organizations will implement ORM programs in accordance with AFI 90-901, *Operational Risk Management*, AFPAM 90-902, *Operational Risk Management (ORM) Guidelines and Tools*, and other AFMC and local guidance.

1.6.9. HQ AFMC/SE:

- Performs evaluations of center/wing ground safety programs as described by AFI 91-301/AFMC Sup 1, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*.
- Evaluates mishap reports, lessons learned, and other crossfeed data for possible dissemination to AFMC subordinate units. HQ AFMC/SE will make maximum use of electronic mail for crossfeed information.
- Develops policy for command-wide safety program implementation.
- Manages AFMC safety program according to applicable AFI 91-series instructions, manuals, and pamphlets.
- Convenes safety corporate board meetings to obtain consensus, status, and commitment on command safety issues.
- Prepares or coordinates on AFMC directives which involve safety.
- Augments AFMC Inspector General activities, as directed.
- Evaluates suggestions pertaining to safety.
- Attends safety meetings, conferences, groups, etc., as required, to maintain the command safety program.
- Coordinates on all revisions submitted to AFMC publications in the AFI 91-series instructions, manuals, and pamphlets.
- Manages the AFMC space safety program.
- Serves as the Air Force representative to the Joint Ordnance Commanders Group, Ordnance Safety Subgroup.
- Manages the AFMC explosives safety program.
- Manages the AFMC Nuclear Surety Program.
- Supports and advises the Nuclear Weapons Systems Safety Group.
- Provides policy guidance to the AFMC Nuclear Certification Program.
- Develops appropriate nuclear surety criteria for AFMC Centers/Wings/Munition Squadrons based on the requirements of the weapons safety and nuclear surety programs.
- Ensures AFMC personnel who performs weapons safety duties are appropriately trained to perform weapons safety related tasks.

1.6.9.4. (Added) HQ AFMC/SE:

- Administers materiel and product safety programs as described in AFI 91-301/AFMC Supplement 1, *Air Force Occupational and Environmental Safety, Fire Prevention, and Health (AFOSH)*, and AFI 91-204/AFMC Supplement 1, *Investigating and Reporting US Air Force Mishaps*, chapter 16, AFMC Materiel Safety Program.

- Ensures acquisition, production and test agencies coordinate specifications, drawings and plans as prescribed by this supplement, and by AFI 91-301/AFMC Supplement 1.

1.6.9.5. (Added) Schedules and conducts test safety reviews according to chapter 13 of this supplement.

1.6.11.16. (Added) Ensure safety personnel are trained in and apply ORM processes in daily operations. Integrate ORM processes in all local safety directives and guidance.

2.1.2. Use the following guidance in selecting a flight safety officer (FSO):

- Previous FSO qualification.
- Current qualification in one of the aircraft flown at the location.
- Previous qualification in one of the airframes flown at that center.
- Previous AFMC experience.

2.1.5. Command and center system safety program managers (CSSM) will take both the SSM and SSA courses.

2.3.7. (Added) Strongly encourage acquisition program managers to involve system safety, flight safety, space safety, and weapons/explosive safety experts very early in the acquisition life cycles of their programs.

2.4.3. AFMC units with a flying mission will maintain an investigation kit . Bases may modify kit contents based on unique center missions or responsibilities.

3.1. The safety staff will ensure all Air Force facilities and work areas within an organization are assessed once each year. This assessment will be conducted by completing the AFMC Risk Based Assessment Worksheet to determine if:

- An inspection is required
- An inspection is required in two years
- An inspection is not required

3.1.1. The safety staff assesses administrative areas by completing the AFMC Risk Based Assessment Worksheet. Results will be briefed to the commander/director.

3.1.2. Safety personnel inspect all work areas through spot inspections. Numbers of spot inspections are recorded during annual assessments.

3.1.3. The annual AFMC Risk Based Assessment Worksheet may be used to determine inspection frequency for tenant units.

3.1.4.4. Completed copies of the AFMC Risk Based Assessment Worksheet are provided to unit commanders/directors during an informal conference that discusses assessment and clarifies any related safety issues. File copies of each organization’s assessments are maintained in the ground safety office.

3.3. Qualified ground safety personnel assess the ground safety program of each organization within the center/base.

3.3.1. Center/base ground safety personnel perform a safety program assessment of GSUs, Detachments, or Operating Locations (Ols) at intervals not to exceed three years.

3.3.4. Completed copies of the AFMC Risk Based Assessment Worksheet are provided to unit comanders/directors during an informal conference that discusses assessment and clarifies any safety related issues. File copies of each organization's assesments are maintained in the ground safety office.

3.7.1. Spot inspections are not required for system safety programs.

3.7.2. Include surveillance visits with spot inspections .

4.1. During all phases of a program's acquisition life cycle, design-related hazards are found through the hazard analysis process outlined in MIL-STD-882. Hazards identified during the acquisition process must be promptly identified to the responsible program management authorities for appropriate resolution actions.

4.3.6. The submitter will be advised that if he or she is not satisfied with the response to the hazard report (HR) that it will be locally reevaluated and reviewed at one level higher than the original evaluation. If still not satisfied, the HR will be forwarded to HQ AFMC/SE for further evaluation.

4.4.6. Forward such reports through HQ AFMC/SE.

7.1. HQ AFMC Flight Safety Program :

- Coordinates and provides guidance on AFMC directives involving aircraft safety.
- Reviews all USAF flight mishap messages to maintain an awareness of current problem areas. Coordinates with appropriate AFMC agencies on logistic corrective actions.
- Keeps a current list of flight mishap investigating members and provide the required training for these individuals.
- Provides assistance to AFMC flight mishap investigating officers and boards.
- Prepares the command's endorsement to AFMC flight mishap reports.
- Takes part in selected mishap investigations.
- Prepares flight safety memorandums to command section on issues affecting AFMC.
- Coordinates, exchanges, and retransmits aircraft mishap prevention information from HQ Air Force Safety Center (AFSC) and appropriate military and civilian agencies.
- Provides support to system safety groups (SSG) and configuration control boards (CCB), when required.
- Conducts staff assistance visits and flight safety program evaluations, unit requested.
- Monitors the mid-air collision avoidance (MACA) and public information programs at AFMC bases.
- Monitors the bird/aircraft strike hazard (BASH) reduction programs at AFMC bases.
- Keeps the letters of agreement current between HQ AFMC and HQ Pacific Air Forces and United States Air Forces in Europe for support of AFMC flight mishap outside the continental United States.
- Monitors status of AFMC mishap investigations and reporting responsibilities involving AFMC possessed aircraft at contractor and contractor field team facilities.
- Processes AFMC flight mishap information according to AFI 91-204.
- Distributes periodic AFMC flight mishap statistics.
- Augments AFMC Inspector General activities, as directed.

- Monitors contract airfield preaward survey program.
- Evaluates airfield and airspace criteria request for waivers concerning both AFMC and contractor airfields.
- Reviews environmental impact statements involving flight operations/safety.
- Evaluates suggestions pertaining to flight safety.
- Manages the material safety program as outlined in AFI 91-204/AFMC Supplement 1 (chapter 16).

7.1.1. Center/unit flight safety program management:

- Monitors unit flight safety programs and provides assistance, as required.
- Reviews incoming flight mishap reports involving unit aircraft and major management items (Ensure thorough review of all mishap messages on all Air Force aircraft for potential applications to AFMC managed systems).
- Ensures establishment of an active deficiency review process, if applicable. Monitors status of the program and ensures that the appropriate agencies take required action. (Coordinates with action agencies on selected items of high flight safety emphasis.)
- Takes part in the Material Safety Task Group (MSTG) and CCB meetings, as required.
- Coordinates annually with airfield management and base civil engineer on airfield criteria waivers, and airfield construction projects.
- Ensures periodic center-wide flight safety meetings are conducted for all active center aircrews and comprehensive minutes are prepared. Assists flying units with content of monthly flight safety meetings. Unit flying organizations will get flight safety meeting information to unit personnel who missed meetings via the flight crew information file (FCIF).
- Ensures the following topics are briefed to all assigned/attached aircrew members annually: BASH program, MACA program, Limited-Use (For Official Use Only), Promise of Confidentiality, Handling of privileged information, Hazardous Air Trafficking Reporting (HATR) program and Hazard program.
- Conducts training for unit FSOs. Maintains documentation of training, including safety program elements discussed, in flight safety continuity book.
- Upon request, assists system program directors (SPD) in preaward surveys and conduct periodic follow-up surveys of contractor airfields where assigned aircraft are flown. When feasible, conducts these follow-up surveys in conjunction with scheduled annual government flight representative safety surveys.
- Maintains liaison with system manager, technical services, combined test forces and service engineering staff to keep current on immediate and more demanding weapon system problems involving flight safety.
- Maintains liaison with life support personnel on new equipment items and personnel equipment/ survival training.
- Monitors the FCIF for adequacy of safety inputs, insert applicable all safety communications.
- Monitors available safety educational materials and publications.

- Coordinates on contracts for aircraft maintenance to make sure proper flight safety provisions are included AFI 10-220, and National Aerospace Standard (NAS) 3306, Facility Requirements for Aircraft Operations.
- Coordinates on operations plans/Memoranda of Agreements involving use of aircraft.
- Furnishes technical assistance to center/wing agencies, as required.
- Conducts an "annual assessment" of airfield safety (to include condition of airfield, transient alert, base operations, tower, and crash fire rescue).
- Establishes procedures to coordinate on all planned organic or contractual flight tests to ascertain need for test review or Safety Review Board (SRB) action. Schedules and conducts test safety reviews according to chapter 13.
- Participates in the acquisition process (attends strategic and tactical roundtables, and dialogue with contracting officers) to ensure that flight safety concerns are addressed when selecting aircraft maintenance contractors.
- Manages center program to ensure personnel working with mishap reports are briefed on limited-use and privileged information aspects of these reports according to AFI 91-204.
- Coordinates with base PA to ensure press releases on flight mishaps do not include privileged information.

7.1.2. Flight Test Unit Responsibilities. Test squadron commander appoints a unit FSO. The FSO:

- Will be fully trained in mishap investigation and reporting (S-prefix Air Force specialty code). If not previously qualified as an FSO, attendance at the Aircraft Mishap Investigation Course (AMIC) or Jet Engine Mishap Investigation Course (JEMIC) fulfills the intent of this instruction provided that the individual is scheduled for the FSO at the earliest available opportunity.
- Reports directly to the flight test squadron commander on flight safety issues.
- Conducts monthly flight safety meetings. Coordinate with center FSO on topics to be covered.
- Distributes flight safety information to crewmembers.
- Maintains a flight safety bulletin board or read file.
- Assists in investigating and reporting of flight mishaps involving AFMC aircraft.
- Sends flight safety matters that can't be resolved to center flight safety office.
- Assists the center FSO in conducting flight safety inspections.
- Initiates reporting process when unit aircraft are involved in hazardous air traffic situations according to the USAF HATR/Hazard programs.
- Monitors the unit life support equipment program.
- Makes sure the following directives (or current versions) are available at the unit: AFR 55-22, volume 1, Contractor's Flight and Ground Operations (AFI 10-220, volume l), AFI 91-202, US Air Force Mishap Prevention Program, AFI 91-204, Investigating and Reporting US Air Force Mishaps, AFI 36-2833, Safety Awards.
- Participates in MSTG meetings, as required.
- Periodically reviews maintenance flight preparation activities and quality assurance inspection reports of aircraft.
- Briefs maintenance-related flight mishaps to applicable maintenance activities.

- Contacts the center flight safety office for his or her required training.
- Monitors the items listed in paragraph 7.5. Maintains a log according to 7.3 (this supplement).

7.1.3. (Added). AFMC units will have a Flight Safety Continuity Book. It provides guidance, responsibilities, and duties; and shows safety's involvement in the programs it oversees to newly-assigned safety individuals. It will include as a minimum:

- Letters of appointment (wing/center individuals, unit additional duty safety personnel).
- Records of training.
- Responsibilities of the appointees (duties).
- Safety Mishap Response Plan (checklist).
- Self-inspection/annual inspection checklists.
- Programs involved in/with (outline responsibilities and/or review process).
- Wing/center flight safety offices will tailor the continuity books to suit and provide a standardized version to all of their units. Units may add specific sections, as required.

7.3. In addition to the areas listed in the basic instruction, monitor the following activities on a periodic basis, the frequency to be locally determined. Semiannual inspections are recommended as a minimum. Those areas designated high interest must be inspected according to paragraph 3.1, basic instruction. For all spot inspection activities, maintain a log of place and date visited, subject reviewed, and any observations. If serious discrepancies are observed, document in memorandum format and follow-up to closed status. Provide the appropriate director or commander a copy of the report. Spot inspections should be analyzed for possible adverse trends. If warranted, a formal, in-depth safety inspection may be conducted to assist in resolution of deficiencies.

- Air traffic control services.
- Air freight terminal.
- Contracting and manufacturing (contracts surveillance).

7.4. Establish procedures for off-duty notification of flight mishaps.

7.6. Initial training (determined locally) will be given as soon as possible after being assigned as a Safety Investigation Board member and annually thereafter. Individuals who attend formal safety schools (AMIC, FSO, JEMIC) are exempt from annual training until the next annual training period.

7.8. Either a civilian or military FSO may act as advisor. Membership and/or flying with the club is encouraged. Use of local funding is justifiable.

7.9. Conduct a yearly review of the base comprehensive plan, status of open items, waived items, eliminated items and new buildings or improvements. Be alert for building plans that may infringe on airfield clear zones. Ensure adequate risk assessments are conducted as part of the review. Annual waiver request packages must be coordinated at the appropriate levels for risk acceptance, i.e., ABW/CC or center commander.

7.10. Centers/wings are the office of primary responsibility for this program. Centers/wings may consolidate MACA programs with other bases (AFMC, Air Combat Command, Air Mobility Command, etc.) in the vicinity to reduce duplication of effort. This will give the local aviation community a better understanding of military operations in the selected regions. Use of Aero Club aircraft is encouraged as part of

the outreach program. AFI 91-301/AFMC Supplement 1, provides more detail on the responsibilities of AFMC Ground Safety Managers.

8.2.8. (Added) Establish procedures to ensure local purchase requests for equipment/occupational training meet safety requirements.

8.4. In the event of a guidance conflict, safety will work with the document owners to resolve the conflict. In situations where there is not enough time to resolve the conflict prior to a mission/operation, the immediate safety of our people and equipment will be the primary concern and the more stringent (safer) standard will apply until the conflict can be resolved.

9.2.3. Program manager functions will be handled by single managers (SM) (e.g., SPDs, product group managers, or materiel group managers) in AFMC units. SMs will ensure that as a minimum at least one (e.g., preliminary) hazard analysis or safety assessment report (MIL-STD-882C) is accomplished for all programs and projects, including temporary and permanent modifications, with an unknown effect on system safety. Facilities and industrial processes which incorporate new technology or areas not covered by existing codes and standards will have tailored system safety programs applied.

9.2.4. Program safety offices must clearly define and document risk acceptance authority during life-cycle system decisions. “High” residual risks (as defined by MIL-STD-882D, Table A-IV) can only be accepted by the Air Force Acquisition Executive (AFAE). “Serious” residual risks (same reference) can only be accepted by the program executive officer (PEO), designated acquisition commander (DAC), or equivalent. In the case of a PEO program having an imbedded DAC sub-program (e.g., aircraft engine) which involves an unacceptable risk at the system (e.g., aircraft) level, the DAC will coordinate on the document and forward it to the PEO for approval, or for coordination and submittal to the AFAE, as applicable. For each unresolved “high" or "serious" risk, the PM will prepare a written residual risk assessment or acceptance document describing the residual risk. Preparation of a written risk assessment/ acceptance document will be accomplished with using command participation, and will be coordinated with the user prior to AFAE, PEO, or DAC signing to accept the risk. This document will be coordinated through the center or laboratory safety office. The AFAE, PEO, or DAC will show his/her acceptance of the residual hazard by counter signing the prepared document. Program offices will coordinate risk acceptance packages witht the using commands and test community. As part of preparations for fielding new or modified systems, program offices will provide the using commands with a listing of at least: all identified hazards, mitigation measures, risk assessments, and risk acceptances.

9.2.6. A trained full-time system safety program manager (SSPM) in the HQ AFMC Safety Directorate will manage the AFMC system safety program. This SSPM will arrange for training for system safety personnel at AFMC field units and will establish policies and guidance for AFMC system safety procedures, personnel, and organizations.

9.3.3.3. The System Safety Engineering Analysis (SSEA) chairperson (team chief) will be the AFMC SSPM.

9.3.3.5. Each product center and logistics center will have a trained full-time CSSM in the center safety office, unless waived by HQ AFMC/SES. Each major laboratory technical directorate and test center will have a trained system safety manager in the laboratory/test center safety office. (The laboratory/test CSSM can be a part-time individual, depending on the local system safety efforts.) If a center/laboratory has a full-time system safety staff, the chief of this staff will be the CSSM or laboratory system safety manager. All center/laboratory system safety managers will document safety criteria and hazard identification and resolution for in-house and for contractual programs. CSSMs will identify program/project

documents to be coordinated by the center/laboratory system safety manager. System safety efforts are not required for nuclear weapons, supplies, and general commodities (i.e., tools, furnishings, etc.). CSSMs or their designated staff members will be members or advisors of SSGs and MSTGs and CCBs. (Full-time SSPMs may represent system safety in lieu of the CSSM on program-unique CCBs, MSTGs, and SSGs.) CSSMs will conduct annual meetings with all center system safety personnel to cover refresher training, crosstell items, and new developments in system safety.

9.3.5.1. Selected programs, as agreed upon by the program office and the CSSM will have trained full-time SSPMs assigned to the program office. Other program offices and engineering organizations within various product directorates, and selected base civil engineering offices will have trained part-time SSPMs. The SSPMs will be responsible for the safety of their programs/products, preparing and implementing program and contractual system safety requirements. They will be members of SSGs and program-unique CCBs and MSTGs, integrated product teams and other groups. Their membership in these groups is necessary to ensure their programs receive proper system safety attention. ALC's product and technical directorates will assign system safety program coordinators (SSPC) to provide administrative system safety support; the SSPCs do not require formal system safety training. An SSPM may serve as an SSPC. If an SSPM is responsible for the development of a modification within his/her system, then the CSSM should be used as an independent safety oversight function.

9.3.5.9. If hazard numbers are assigned using the work unit code classification system, hazard tracking can have improved tie-ins to equipment failure tracking.

9.4. SSGs will be established for all Acquisition Category I (ACAT I) programs and for all aircraft unless waived by the HQ AFMC SSPM. (An SSG for an ACAT I program may continue if the program has been changed to a non-ACAT I status.) SMC may use local safety review councils in lieu of SSGs. The CSSM, program SSPM, materiel safety program manager, center FSO, and HQ AFMC SSPM will be members or advisors to the SSGs.

9.4.1. The engineering/technical director or chief engineer can function as the deputy program director for chairing SSGs. SSGs can be co-chaired by using commands or other centers.

9.4.2. Prior to each SSG meeting, the SM will poll SSG members for agenda items. If no agenda items are received and there are no open action items, the SM can cancel the meeting.

9.4.3. The SSG charter will address the purpose and scope of the SSG, SSG membership (to include program, center, HQ AFMC, HQ AFSC, and using command safety personnel), operating procedures, and administration of the group.

9.4.5. The SM will be responsible for preparing minutes of SSG meetings and distributing them to HQ AFMC/SES, SSG members and attendees 30 days after the meeting.

9.5. If no usage history is available for the nondevelopmental item, a tailored system safety effort will concentrate on hazard analyses of the existing design operating in the planned use environment. If usage history is available and the usage is equivalent, and no modifications are desired, the system safety program should focus on mishap-identified deficiencies, operating and maintenance manuals, and any proposed interface with other Air Force systems. If usage history is available and not equivalent, a tailored system safety program is required for all areas not complying with standards normally accepted by DoD organizations. In any case, system safety analyses are required for all Air Force unique modifications to the existing design. Engineering/design projects for Air Force industrial systems, support equipment, and process changes must use the AFMC Form 299, Environmental, Safety, Fire, and Health Review or

locally-developed equivalent, to document the necessary reviews. The organization initiating the project must prepare the form and coordinate with the center safety office.

9.6. Risk assessments will also be accomplished for major design decisions, including modifications, having significant system safety effects. Risk assessments must address the 15 questions listed in paragraph 18.3 of the Air force System Safety Handbook. In any case, risk assessments will be coordinated with the CSSM and will be briefed to SSGs. When necessary, these risk assessments will be used to document residual hazards to be reported to the AFAE, PEO, or DAC.

9.7. Each SSEA team will be formed by the SSEA Team Chief at HQ AFMC/SE. When necessary, designated team members will vote on specific issues, with the team chief voting only to break tie votes.

9.7.3. The SSEA Team Chief will document each SSEA with a formal report that will also include the final SSEA-recommended aircraft servicing procedures. Upon publication of the formal report, the requested aircraft servicing operations can began to be accomplished. Informal tabletop (in-house) SSEAs can be substituted in cases where sufficient safety data are available from operational experience or from previous SSEAs.

9.7.4. (Added) Changes to the following aircraft servicing procedures must be coordinated with the SSEA team chief prior to publication:

- Hot refueling and defueling.
- Integrated combat turnaround (ICT)/hot ICT.
- Aircraft-to-aircraft servicing operations.
- Wet wing/rapid defueling.
- Concurrent servicing.

9.8. (Added) Trained system safety personnel will be those having completed the formal USAF System Safety Management course, System Safety Analysis course, or an equivalent course approved by the AFMC SSPM.

10.1. Each center/wing is responsible for developing and implementing a weapons safety program to address immediate weapons safety functions on the day-to-day base operations. The weapons safety program includes explosives and missile safety, and nuclear surety elements. Examples of these functions are explosives site planning, explosives location licensing, safety during explosives operations, Dull Sword reporting, explosives storage, handling, and transportation, etc. Each center/wing is also responsible for weapons safety designed, manufactured, and maintained in weapons systems, support equipment, launch/delivery vehicles, and related facilities which exists throughout life cycle of the entire weapon system. Examples of these functions are weapons systems safety groups, verifications of weapons systems technical orders (TO), ensuring safety criteria are incorporated into weapon systems design and develop, considering the safety impact of modifications to existing weapon systems, identifying acceptable quality and reliability levels required to satisfy safety standards, etc.

10.1.1. All units with a mission involving munitions, weapon systems designed to carry munitions, or explosives must appoint an additional duty weapons safety manager. The unit weapons safety manager must be the most qualified person available and may be a non-commissioned officer who is weapons-trained, or civilian with equivalent experiences. Units must advise the AFMC Chief of Weapons Safety in writing of the name, grade, organization address, location, and phone number of the person selected as the unit weapons safety manager.

10.1.2. The center/wing weapons safety office must be the "center of expertise" for weapons related issues and processes at the center/wing. The safety office must support requests for evaluation of hazardous explosive operations, conducts the required inspections, etc.

10.3. Provide support at selected weapons systems safety groups meetings, design reviews, TO reviews, or other conferences or meetings in support of developmental or inventory missile systems. For IWSM programs provide support if requested.

10.3.1. (Added) Formulate, review, and coordinate on specifications, standards, acquisition packages, design criteria, etc., which involve missile system safety. For IWSM programs provide support if requested.

10.4. Each center/ wing that has nuclear responsibilities will have a nuclear surety program.

10.4.1. (Added) Review all Air Force Accident/Incident/Deficiency Reports for AFMC involvement and monitor actions and replies to correct deficiencies.

10.4.2. Explosive waivers, exemptions, and deviations will be approved/disapproved IAW AFMAN 91-201. Center/wing commanders must review and validate the continued need for waivers, exemptions, and deviations as required in AFMAN 91-201. Forward approved approved waivers, exemptions, and deviations through HQ AFMC/SEW for review and processing to HQ AFSC/SEW.

10.4.7. Submit updates to the Air Force explosives exception program to HQ AFMC/SEW not later than 1 November. The exceptions program is a software program to track explosives waivers, exemptions, and deviations. Negative inputs are not required if no changes occur. Submit changes as they occur, and during the annual update at the end of each fiscal year.

10.5. Forward all notifications of scheduled surveys, survey reports generated by the Department of Defense Explosive Safety Board, and corrective actions to HQ AFMC/SEW.

10.5.1. Submit construction site plans to HQ AFMC/SEW for review and approval/disapproval according to AFMAN 91-201. HQ AFMC/SEW will review and forward site plans with recommendations to HQ AFSC for approval/disapproval.

10.5.4. (Added) Each center/wing must ensure AFMC weapons mishaps are properly investigated and reported according to AFI 91-204.

10.5.5. (Added) Review environmental impact statements involving weapons safety.

10.5.6. (Added) Coordinate, exchange and retransmit weapons mishap prevention information from HQ AFSC to appropriate military departments and civilian agencies.

10.5.7. (Added) Product Safety. Weapons safety incorporates two basic responsibilities affecting explosives, missile and nuclear surety elements. The first deals with the development and implementation of a program to address the safety concerns in the day-to-day operations known as base weapons safety. The second is the product safety aspect that deals with the design, manufacturing, and maintenance of weapons systems, support equipment, launch/delivery vehicles and related facilities throughout the entire life cycle of a weapons system. To effectively administer the product safety program, the following is required:

10.5.7.1. (Added) Product directorates whose operations, management, maintenance or engineering functions contribute to the safety of weapons systems must appoint explosives, missile or nuclear surety monitors in their functional areas. These monitors will perform the following duties relative to explosives/

missile safety and nuclear surety. For those specific weapon systems under the Integrated Weapons System Management (IWSM) concept, safety support may be requested from the ALC/air base wing (ABW) weapons safety office.

- Advise and assist the system program manager, division chief, and ALC/ABW weapons safety officer, on safety/nuclear surety matters within their division.
- Develop and use a self-inspection checklist containing the primary elements of safety/nuclear surety.
- Forward to the ALC/ABW weapons safety office notifications and minutes of management conferences and other meetings in which safety/nuclear surety subjects are discussed.
- Ensure that modifications and major maintenance plans, TOs and changes involving safety, hazard analyses, etc., are provided to the ALC/ABW weapons safety office for review and coordination of explosives/missile safety requirements.
- Coordinate replies to mishap investigation board action items with the ALC/ABW weapons safety office.
- Coordinate all plans and directives that affect safety/nuclear surety with the ALC/ABW weapons safety office.
- Implement an aggressive safety/nuclear surety training and education program. Provide training outlines and lesson plans to ALC/ABW weapons safety office for approval. Forward the approval to HQ AFMC/SEW. Provide initial training to subordinate safety assistants.
- Ensure that all changes to -33 series loading TOs are coordinated with OO-ALC/WCMS before publication.

10.5.7.2. To effectively administer the product safety program, each center/wing safety office will:

- Be knowledgeable of the portions of the ALC systems or items (aircraft, test or support equipment, containers, etc.) used directly with munitions or explosives. This knowledge must include the quality and reliability programs for these ALC products.
- Attend CCB, MSTG, SSG, Program Objective Memorandum meetings and other meetings as required to support the safety, quality or reliability of the ALC-managed munitions or weapons systems.
- Support the Nonnuclear Munitions Safety Board according to AFI 91-205/AFMC Supplement 1, Nonnuclear Munitions Safety Board.
- Monitor the timelines and adequacy of ALC directorate support for taskings (studies, reports, evaluations) involving weapons safety requested by other agencies.
- Review all safety analyses, operating instructions, test directives, plans, and programs which involve weapons safety.
- Participate in design, development, modification meetings, conferences, groups, etc., as necessary to ensure safety requirements are incorporated for systems or items which the ALC has or will gain engineering management responsibility.
- Review applicable Requests for Proposals involving weapons or weapons systems to ensure adequate contractual safety requirements are included.

10.6. Identify AFMC personnel for appropriate weapons safety training. Weapons safety training at the centers/wings must be tailored to the specific duties and weapon systems at that organization. Nuclear

surety lesson plans must be developed by the centers/wings annually for approval/disapproval at the center/ABW level. Lesson plans, tests, etc. may be reviewed for accuracy during nuclear surety inspections, staff assistance visits, etc. Lesson plans can be locally developed to satisfy the needs of the subordinate units.

10.7. HQ AFMC/SEW must provide support, through membership, to the Air Force Explosive Safety Council (AFESC) to assure issues and concerns of AFMC are properly addressed by the AFESC.

10.12. (Added) Nonnuclear Munitions Safety Board (NNMSB). The NNMSB is chaired by AFSC/SEW and consists of experienced weapons and munitions personnel who hold key staff positions within their respective MAJCOM. HQ AFMC/SEW will provide support, through membership, to the NNMSB. The NNMSB is the review authority for approvals and safety certification assessments of all nonnuclear munitions during research, development, test and evaluation, acquisition, and operational life cycle. The NNMSB process and procedures are reflected in AFI 91-205, *Nonnuclear Munitions Safety Board.*

11.1. Space safety consists of launch safety and orbital safety. All units with space mission that involves operations, handling, transporting, storage, etc., of explosives, weapons (nuclear and nonnuclear), etc., must establish a credible weapons safety program.

11.1.1. Risk management must be accomplished for major design, development, and test decisions, including test vehicles, payloads, boosters, etc.

11.1.2. Centers/wings must ensure space launch and orbital safety mishaps are properly investigated according to AFI 91-204. Forward preliminary, interim status, and final reports to HQ AFMC/SEW.

11.2. Space safety consists of launch safety and orbital safety and must be part of the weapons safety program. All units with space mission that involves operations, including test launches, handling, transporting, storage, and operations in storage and processing facilities of explosives, weapons (nuclear and nonnuclear), satellites, etc., must establish a credible weapons safety program.

11.4. The Space Safety Council is chaired by HQ AFSC/SEW. HQ AFMC/SEW must provide support, through membership, to the Space Safety Council to ensure space issues and concerns are addressed and rsolved.

11.5. Centers/wings with space nuclear surety programs and use radioactive materials must submit safety analysis summaries through HQ AFMC/SEW to HQ AFSC/SEW. Copies of forecasts and reports of all launches with radioactive materials must be provided to HQ AFMC/SEW.

Chapter 12 (Added)

CONTRACTUAL SAFETY PROGRAM

12.1. (Added) Contract Safety Program. Center safety staffs review purchase request (PR), SOWs, statement of need, performance work statement, and related contract specifications, based on local needs and programs to ensure inclusion of safety requirements, clauses and appendices in contracts. The center safety staff will establish procedures to ensure review of any SOO/SOW/MNS, PR or other specifications:

- That will eventually result in a contract containing the ground/flight risk clause.
- That will eventually result in a contract containing property protection clauses.
- That will expose Air Force personnel to the hazards of the work to be performed.
- That involves either government or contract flight operations.
- As recommended by the center/SE or when requested by the program manager because of mission criticality of the product or service to be contracted.
- For the purchase of any equipment, vehicles or tools from a locally-prepared specification. Also see AFI 91-301/AFMC Supplement 1 for more information of first article demonstrations.
- For the purchase of off-the-shelf equipment, vehicle, tools, etc., to be used in a manner not covered by the manufacturers instructions or to be used in performance of potentially hazardous work such as work in confined spaces, degreasing, fuels servicing, etc.

*For purchase/procurement of specialized occupational training that exposes AF personnel to chemical, environmental, mechanical, physical or other hazards.

12.1.1. (Added) Reviews should be accomplished prior to submission to the installation contracting activity. The installation contracting activity should ensure safety office review prior to acceptance.

12.1.2. (Added) Commodity contracts without product safety concerns may be exempted from review. However, a mishap reporting clause as specified in 12.2.4 below will be included if Air Force property liabilities exceed $10,000.

12.2. (Added) Contract Safety Specifications. The center safety staff will consolidate all safety inputs and provide coordinated safety specifications back to the program manager. Product safety specifications may be incorporated in the manner that best fits the center contracting process. Tailore contract safety sections will be used for all depot level workload. All safety specifications and/or requirements should be intended for the protection of Air Force people, assets, and interests.

12.2.1. (Added) Safety specifications will include product or system specific safety requirements tailored to the SOW, PR, etc. Safety specifications may reference, but should not restate, Occupational Safety and Health Administration (OSHA) or other regulatory requirements.

12.2.2. (Added) Operations not covered by regulatory requirements, e.g., OSHA should be detailed in the contract safety specification or section. Examples include (but are not limited to) engine runs, aircraft towing, fuel servicing and ground handling, parking and mooring, hangering of fueled aircraft, foreign object damage prevention, aircraft jacking, fuel cell/tank repair, and operations where OSHA has no jurisdiction (foreign locations).

12.2.3. (Added) If an AFOSH standard or Air Force TO adequately defines safety requirements, the standard may be incorporated by reference, (e.g., "All aircraft fuel cell/tank repair will be performed and supervised according to TO 1-1-3 by personnel meeting the training and qualification requirements listed in TO 1-1-3.")

12.2.4. (Added) Safety specification shall require mishap notification to the contracting officer for all incidents resulting in damage to Air Force property at or above the AFI 91-204 threshold. It shall include specific notification instructions and timelines, and require the contractor to cooperate with any and all government investigations. Additionally, it shall require the contractor to secure the mishap scene and impound evidence/wreckage until released by the government contracting officer. The safety specification shall include contractor mishap reporting, with copies of contractor data related to the mishap, such as contractor analyses, test reports, summaries of investigations, etc. as necessary to support the government investigation. An appropriate contract data requirements list/data item description reference for mishap reports, specifying a copy of each mishap report be sent directly to the safety office preparing the specification, shall be included.

12.2.5. (Added) If the contract will require contractor flight operations, the contract should be reviewed by flight safety. The contract will direct compliance with AFI 10-220. Optimally, this will be a SOW line item, however inclusion in a safety specification or section is acceptable. For contracts involving either government or contractor flight operations, compliance with AFMCI 91-101 will be included in the safety specification.

12.2.6. (Added) When ammunition or explosives are involved, the contract should be reviewed by weapons safety. The safety specification will require the contractor to comply with DoD 4145.26-M, *DoD Contractors' Safety Manual for Ammunition and Explosives*. (**Note:** Some contracts will automatically require compliance through reference to Defense Federal Acquisition Regulation Supplement, Part 252.223-7002, Safety Precautions for Ammunition and Explosives. If so, no other specifications are required.) If the scope of work includes air shipment of explosives, the safety specification should require contractor compliance with AFJMAN 24-204, *Preparing Hazardous Materials for Military Air Shipments*.

12.2.7. (Added) The contract must contain a clause requiring the contractor to require that all subcontractors comply with the safety requirements/specifications in the contract.

12.2.8. (Added) Changes to contract safety specifications will be coordinated with the safety office preparing the specification.

12.3. (Added) Pre and Post Award Surveys and other Site Visits. SE will participate in pre and post award surveys as needed to ensure compliance with safety specification requirements. SE's should also program for mishap investigations at contractor facilities. Conduct annual surveys of contractor industrial safety programs and facilities. When feasible, conduct these surveys in conjunction with annual safety surveys. All visits will be coordinated with appropriate program management personnel and contract administration functions. Survey and other site visits, for which safety incurs TDY costs, will be paid for on a fee-for-service basis by the program manager or contracting office.

12.4. (Added) Source Selection. SE offices will participate in source selections as best fits the need of the center. A safety representative should participate in the source selection for any contract containing extensive safety specifications, including acquisitions and depot contracts. Full-time assignment to a source selection board will is at the discretion of the center, however part-time participation is encouraged when sufficient to protect safety related Air Force interests.

12.5. (Added) Base Service, Construction, and Maintenance Contracts. Center SEGs will establish a review, coordination, and surveillance process for the above base level contracts as best protects the safety interests of the installation. As a minimum, SEG will establish a process that:

- Ensures the protection of Air Force personnel colocated or exposed to the hazards of the contract effort.
- Ensures protection of Air Force property and interest.
- Advises contractors of any Air Force generated hazards associated with the work. This includes but is not limited to notifying contractors of Air Force identified permit required confined spaces and associated hazards and complying with the notification requirements of 29 CFR 1910.1200.
- Ensures the base contracting officer is advised of hazards observed on contractor sites or during contractor operations.
- Ensures attendance at meetings or briefings necessary to accomplish the above tasks.
- Attends construction design reviews to ensure safety related codes, regulations/instructions, and standards are being met.

12.5.1. (Added) See AFI 91-301/AFMC Supplement 1 for more information on plans, engineering design, and construction review.

12.5.2. (Added) SEG will have a member at OMB Circular A-76 Steering Groups.

Chapter 13 (Added)

TEST SAFETY REVIEW PROCESS

13.1. (Added) Applicability, Purpose, and Waivers:

13.1.1. (Added) Applicability. This process applies to all AFMC organizations that plan, support, and conduct ground, weapons, flight, or space test and evaluation including research and development (R&D) laboratories. All test programs will have a final safety review.

13.1.2. (Added) Purpose. This process is an integral part of test and evaluation which protects personnel and resources by identifying test unique hazards and recommending risk reduction measures.

13.1.3. (Added) Waivers. Submit requests for waivers to HQ AFMC/SE.

13.2. (Added) Policy:

13.2.1. (Added) The test safety process applies to all AFMC organizations that conduct test programs. All test programs will have a final safety review. The intent of the review is to minimize risks to an acceptable level and then identify the residual risk. The appropriate authority can then make an informed decision whether to approve or disapprove the test based on the amount of residual risk.

13.2.2. (Added) Safety planning is accomplished concurrently with test planning. Final safety review occurs after the test plan receives technical approval. The final review provides an objective, independent evaluation of the risks and associated controls of the test hazards. Tests planned and reviewed by other organizations may be accepted by the AFMC test approval authority (paragraph 13.9). This acceptance is based in part on the participation of AFMC personnel in that review process. All test and evaluation will be conducted according to approved test and safety planning.

13.2.3. (Added) Testing organizations including R&D laboratories develop local procedures tailored to fit the command and organization structure of their organization to implement this process. Local procedures may be in the form of a supplement or a separate publication. Locally-produced forms may also be used to implement this process. The procedures are approved by the test organization commander or director and forwarded to HQ AFMC/SE for review.

13.3. (Added) Responsibility:

13.3.1. (Added) HQ AFMC/SE will:

- Establish test safety review policy.
- Review local publications or supplements.
- Provide required training to key personnel in the safety office.

13.3.2. (Added) HQ AFMC/DO will:

- Ensure that this test safety review process is made an integral part of all test and evaluation activities.
- Ensure that this process is included or referenced in other test publications, as applicable.

13.3.3. (Added) Test requesting organization will provide information and data to support the test safety review process.

13.3.4. (Added) Test Organization Commander or Director will:

- Comply with this guidance.
- Provide resources to support the test safety review process.

13.3.5. (Added) Test Organization Safety Office will:

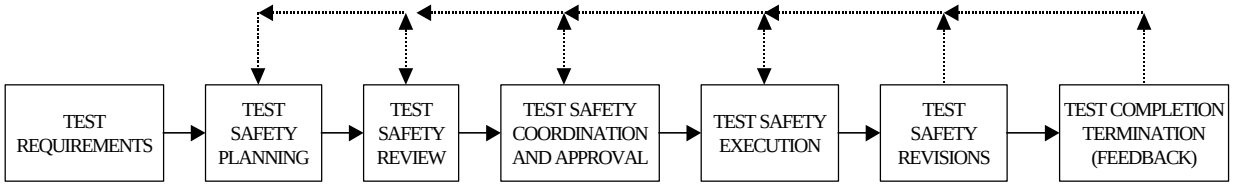
- Be responsible for the test safety review process.
- Supplement this publication or develop a separate document that establishes the local process and procedures to support the requirements.
- Determine the level of safety review required.
- Assist the test manager in developing the safety plan/solution.
- Designate or act as the SRB chairperson.
- Develop and provide training for test personnel involved with the test safety review process.
- Where applicable, coordinate with the host base safety offices to ensure comprehensive review of program safety requirements.

13.3.6. (Added) Test Manager/Planner will:

- Contact the safety office and provide information concerning test requirements.
- Develop the safety plan as a part of the test plan. Provide technical assistance in developing the safety plan/solution.
- Ensure that testing is conducted according to the approved safety plan/solution.

13.4. (Added) Test Safety Review Process. The test safety review process consists of these main functions: planning, review, coordination and approval, execution, safety revisions, feedback and test completion or termination. All test programs (ground, flight, space, etc.) will follow this process through the life of the program (see figure 13.1). Test safety success depends on early and continuous involvement of the test safety personnel. Safety's early involvement as an integral member in test planning may mitigate cost or schedule impacts to the test program.

Figure 13.1. (Added) Test Safety Review Process.



13.5. (Added) Test Safety Planning:

13.5.1. (Added) Test unique hazards must be identified and considered during the earliest stages of system development, and test planning and development. Test managers/planners will ensure a test safety representative is involved in early test concept development or Test Planning Working Group meetings.

13.5.2. (Added) Safety planning and technical planning are an integral and interactive process. It may be convenient to assess technical issues separately from safety issues; however, test managers shall consider both issues during the test planning process. Test safety representatives will assist the test managers/planners throughout this process to provide inputs on all safety-related issues.

13.5.3. (Added) All test unique hazards should be identified. To facilitate this process, the test managers/planners should use all available resources. These include, but are not limited to:

- System safety hazard analyses conducted on the test article or a similar article.
- Lessons learned from similar tests.
- Inputs from other experienced or expert individuals, such as other test program managers, engineers, operations personnel and test safety personnel.
- Other independent or internal hazard analyses.

13.5.4. (Added) Eliminate or control identified test unique hazards. Consideration should include:

- Design of the test article or test facility.
- Incorporation of safety devices into the test article or the test facility.
- Provision for warning devices for the test article or test facility.
- Development of test procedures (to include build-up) and proper training of the individuals conducting the test.
- After establishing the hazard controls, identify the residual hazards.

13.5.5. (Added) Safety Plan/Solution Documentation. The following documents comprise the elements of the safety plan:

- Test Hazard Analyses (THA). These are prepared during the test planning phase and finalized during the safety review. Paragraph 13.14 describes the content of a THA.
- Final Safety Review Documentation. This information provides a summary of the safety review. The SRB minutes may suffice if a formal board was held. This information will include, but is not limited to:
    - Date.
    - Test or project identifier.
    - SRB attendees or individuals who coordinated on the safety plan/solution if an SRB was
    - Mishap accountability.
    - Specific minimizing procedures, controls, restrictions, and go/no-go lists.
    - Special considerations.
    - Action items.
    - Overall risk assessment.
    - Other Supporting Documentation.

13.6. (Added) Test Safety Review:

13.6.1. (Added) Each test plan is subject to separate technical and safety reviews. Technical reviews for flight tests are covered in AFMCPD 99-1, Test and Evaluation (T&E) Risk Management. For other tests where there is no requirement for a formal technical review, the test safety office will determine when the technical adequacy of the plan is sufficient to continue with the safety review. The final safety review takes place after the technical adequacy of the test plan is approved.

13.6.2. (Added) When a test is ready for a safety review, test safety determines if an SRB is required based on the scope, complexity, similarity to previous tests, and anticipated risk level.

13.6.2.1. (Added) If an SRB is required:

- The Chief of the Test Safety Office or designee is the chairperson for the SRB. Membership and attendees are stipulated in local supplements/publications. Minimal membership of the SRB includes independent technical and operations representatives, maintenance experts, safety experts, the test manager/planner, and other personnel directly involved in the test.
- The SRB reviews the test to ensure all hazards are identified and controls are developed. The SRB will certify the completeness of the safety plan and determine the overall risk level of the test. The results of the SRB will be documented.
- Test safety certifies whether the open action items have been accomplished prior to test execution. The SRB chairperson recommends to the approval authority whether or not to execute the test based on the SRB results.

13.6.2.2. (Added) If no SRB is required, test safety reviews the test and safety planning to ensure all hazards have been identified and controls have been developed. Test safety determines the overall risk level of the test and recommends to the approval authority whether or not to execute the test**.**

13.6.3. (Added) Risk Level. To help manage a test and its risk, the safety review establishes a risk level for each individual hazard/test event as well as the test as a whole. AFMC recognizes at least three risk levels which are further defined below. Assigning these risk levels is more thoroughly covered in MIL-STD-882*DOD Standard Practice for System Safety*. As a guide, test safety can use these definitions and the following matrix.

Figure 13.2. (Added) Example Risk Assessment Matrix.

	HAZARD SEVERITY CATEGORY			
	Catastrophic	*Critical*	*Marginal*	*Negligible*
HAZARD PROBABILITY	Death or system/ facility loss	Severe injury, occupational illness, or major system/ facility damage	Minor injury, minor occupational illness, or minor system/ facility damage	Less than minor injury occupational illness or system/facility damage
FREQUENT *Likely to occur frequently **Continuously experienced	1	3	7	13
PROBABLE *Will occur several times **Will occur frequently	2	5	9	16
OCCASIONAL *Likely to occur sometime **Will occur several times	4	6	11	18
REMOTE *Unlikely, but possible to occur **Unlikely, but can be reasonably expected to occur	8	10	14	19
IMPROBABLE *So unlikely, assume it may not occur **Unlikely to occur but possible	12	15	17	20

* Specific Individual Item.

** Fleet or Inventory.

13.6.3.1. (Added) AFMC risk levels are defined as:

13.6.3.1.1. (Added) Low Risk. Tests or activities which present no greater risk than normal operations after appropriate controls have been applied. (For the example matrix above this would be 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20.)

13.6.3.1.2. (Added) Medium Risk. Tests or activities which present a greater risk to personnel, equipment, or property than normal operations even after the appropriate controls have been applied. (For the example matrix above this would be 6, 7, 8, and 9, .)

13.6.3.1.3. (Added) High Risk. Tests or activities which present a significant risk to personnel, equipment, or property, even after all precautionary measures have been taken. (For the example above this would be 1, 2, 3, 4, and 5.) The safety review will use these guidelines, expert opinions, engineering analysis, and common sense to assign risk levels to each identified hazard and the test as a whole.

13.7. (Added) Test Safety Coordination And Approval:

13.7.1. (Added) The coordination and approval process for test safety plans will be established in the local supplement. In general, the higher the risk, the higher the approval authority will be. Tests assigned a risk level of high require final approval by the test organization (center) commander or director. In the case of the AFRL, tests assigned a risk level of high will require final approval by the Director of the Technical Directorate.

13.7.2. (Added) The test planner/manager will certify the test plan is complete and the safety plan/solution is certified by test safety. The status of open action items from the technical or safety reviews will be documented and included with the test plan and safety solution and forwarded to the approval authority.

13.7.3. (Added) Nonconcurrence by a coordinating official must be resolved before final approval. If the issue cannot be resolved, it will be presented to the approval authority for resolution.

13.7.4. (Added) Local supplements will specify approval authority required before performing individual test events based on the risk level for that event. A test event can be a sortie, a specific test, or a test milestone.

13.8. (Added) Test Execution:

13.8.1. (Added) The test planner/manager is responsible for reviewing the safety plan/solution and ensuring all applicable requirements are incorporated into the test procedures. Test personnel will review the hazards, minimizing procedures or controls, emergency procedures or corrective actions, and go/no-go criteria before beginning the test.

13.8.2. (Added) The test will be conducted according to the approved test and safety plans. Changes to either of these plans will require further safety review. Changes may occur because of unexpected test results, overly restrictive controls, test program initiated changes, or hazards not previously identified or adequately controlled.

13.9. (Added) Project Or Safety Plan Revisions:

13.9.1. (Added) Test planner will contact test safety if changes to the test or safety plans are required after approval has been granted to proceed with the test. Test safety will evaluate the safety impact of the proposed change and determine the action necessary. Resulting actions may vary from no action, to amending the safety solution/plan, to reaccomplishing the safety review (figure 13.1). Local supplements will establish procedures to amend safety solutions/plans.

13.9.2. (Added) Local supplements will define the frequency of periodic test and safety plan reviews and the maximum number of amendments allowed to a safety plan.

13.10. (Added) Project Completion Or Termination. The test manager notifies test safety when the test is complete. Notification includes any safety lessons learned, effectiveness of hazard controls or minimizing procedures, unexpected hazards, value added from the safety review process, and suggestions for improving the safety review process. The notification can be in several forms from a phone call to a formal report, as long as it is documented for future use as a lessons learned.

13.11. (Added) Special Considerations:

13.11.1. (Added) The test organization commander or director may approve deviations when required by special circumstances.

13.11.2. (Added) The test safety review process may be applied to operations other than testing. Examples include training, exercises, support plans, air shows, or contractor demonstrations, etc.

13.11.3. (Added) Safety reviews conducted by other organizations may be accepted at the discretion of test safety. This determination will be based in part on involvement of test safety in the safety review, the assets involved, and the adequacy of the technical and safety reviews.

13.11.4. (Added) Contractor test programs using AFMC resources will comply with the test safety process.

13.12. (Added) THA Format. The THA is used to identify the test unique hazards and the actions necessary to minimize or control them. A THA includes the following information:

13.12.1. (Added) Test Title. Provide information concerning test identification to relate this specific THA to a specific test or test series.

13.12.2. (Added) Hazard. This is the condition or situation that has the potential to result in a mishap or an accident. It is that condition or situation that precedes or accompanies the unplanned, uncontrolled release, transfer, or dissipation of energy (e.g., kinetic, potential, chemical, laser, nuclear, electrical, etc.) The statement describes the condition or situation, not the mishap itself.

13.12.3. (Added) Cause. A cause is the circumstance or action that leads to the hazard's occurrence. It may be a failure mode, operator error, or out-of-limit condition. A hazard may have multiple causes and each must be identified.

13.12.4. (Added) Effect. This is the mishap or accident to be avoided. It identifies who or what resources will be injured, damaged, or destroyed if the hazard occurs.

13.12.5. (Added) Controls/Minimizing Procedures. Explain the actions to be taken (e.g., remove, mitigate, or warn of the existence of a hazard cause) to prevent the hazard from occurring.

13.12.6. (Added) Corrective Actions/Emergency Procedures. These are steps to be taken if the hazard should occur. These are used to recover from a hazardous situation, or to limit the extent of the injury or damage due to a hazard that is occurring.

13.12.7. (Added) Comments. Additional considerations may be recorded here.

13.12.8. (Added) Hazard Category. Use the category definitions established by the Risk Assessment Matrix (figure 13.2) and MIL-STD-882.

13.12.9. (Added) Hazard Probability. Use the probability definitions established in the Risk Assessment Matrix (figure 13.2) and MIL-STD-882. The probability must consider that the hazard may have multiple dependent or independent causes.

13.12.10. (Added) Risk Level. Assigning a residual risk level is a prime purpose of the THA process and this form. The residual risk level (high, medium, low, etc.) is arrived at by determining the hazard category and hazard probability using a matrix similar to figure 13.2. The hazard category for a test-specific hazard is easily established; however, assignment of the hazard probability can be highly subjective, and is at the very heart of risk assessment. It is here that considerable insight, experience, and engineering judgment come into play.

Attachment 1 (ADDED)

GLOSSARY OF TERMS

Appropriate Authority-The individual who approves the safety plan/solution. This individual may range from a group chief for low risk test to the center commander or director for high risk tests.

Control/Safety Measure-An action taken to eliminate or reduce a potential test hazard to an acceptable risk level.

Deviation-The intent of the requirement is to be met in another manner other than as specified.

Independent Review-A review by an individual or group that does not have a vested interest in the successful accomplishment of the test objectives and was not directly responsible for the development of the safety plan.

Operational Risk Management (ORM)-The systematic process of identifying threats/hazards/problems, assessing risk, analyzing risk control options and measures, making control decisions, implementing control decisions, accepting residual risks, and supervising/reviewing the activity for effectiveness.

Risk Level-An expression of the danger posed by a hazard in terms of the severity of outcome and the probability of occurrence. Risk levels are assigned to both a test event and the test as a whole.

Safety Plan/Solution-The safety plan/solution establishes the specific safety criteria and parameters to allow safe conduct of a test. This plan can identify targets, munitions, aircraft, and other equipment to be used; defines danger areas; identifies the potential hazards associated with the test; and establishes the specific safety requirements necessary to conduct the test, such as special handling procedures, flight termination systems, surveillance requirements, communications requirements, etc. The safety plan may include as attachments, documentation resulting from the entire safety planning and review process which may be incorporated as a part of the safety solution, such as System Safety Program Plan, test hazard analyses, etc. The safety plan may be an integral part of the test plan, or an appendix to the test plan.

Safety Review-Formal review and documentation of test safety planning by the independent safety reviewing authority. The reviewing authority is determined by the test organization's safety office and may vary from a formal SRB to a review by a single test safety individual. The outcome of the final safety review is the safety plan and an assessment of the overall risk level of the test.

Safety Review Board (SRB)-An independent group of subject knowledgeable individuals convened to review the test plan to ensure test hazards are identified; eliminated, minimized or controlled to an acceptable level; and to establish the overall risk level.

Test Hazard Analysis (THA)-A document that identifies test hazards, causes, effects, and establishes hazard controls. It is used to determine risk level. See attachment A for THA content and element explanation.

Test Manager/Test Planner/Test Director-By whatever name, this is the individual who is responsible for planning and managing the test and evaluation of a particular product or item; provides test information to the safety office; ensures the test is conducted according to plan; and provides feedback to safety after the test is completed. He/she is the single point of contact to test safety for the test under consideration.

Test Organization-The organization providing the test facilities, equipment, and personnel to conduct a test. The article being tested may or may not be a resource of the test organization.

Test Organization Commander or Director-The highest ranking individual at the center or test organization (commander or director). This individual has responsibility for the personnel and facilities for accomplishing the test, and is the individual responsible for reporting mishaps involving the test article or the facilities.

Test Safety-The safety office that reports directly to the test organization commander or director or the representative in that safety office responsible for managing the test safety review process. This responsibility may reside in the test organization's Range, Test, Flight, System, Space, Ground, Weapons, or Explosive Safety Office.

Test Unique Hazards-Hazards that are a result of the specific test being accomplished and not present in the normal operational hazards associated with the system or environment. These hazards include those inherent to the article being tested as well as those hazards associated with the initial testing of any new system.

Waiver-Neither the intent nor the letter of the requirement is expected to be met.

VANCE E. LINEBERGER, Col, USAF
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